

CLAIMS

WHAT IS CLAIMED IS:

1. A method for manufacturing a vehicle body panel, comprising:
applying a plastic film onto a reverse side of a film-like exterior covering;
hardening the plastic film; and
applying a back-foamed layer on top of the hardened plastic film.
2. The method of Claim 1, wherein the film is applied by a spraying process.
3. The method as recited in Claim 1, wherein the step of applying the back-foamed layer comprises:
applying liquid plastic onto the plastic film after the hardening step; and
foaming the liquid plastic to form the back-foamed layer on the plastic film.
4. The method as recited in Claim 1, further comprising adding fibers to the back-foamed layer.
5. The method as recited in Claim 4, wherein the fibers are added by a long fiber injection method.
6. The method as recited in Claim 4, wherein the fibers are added by placing a fiber mat onto the hardened plastic film before the step of applying the back-foamed layer.
7. The method as recited in Claim 4, wherein the fibers are added by being mixed with a material used to form the back-foamed layer.
8. The method as recited in Claim 1, wherein the exterior covering is disposed in an open foam die, and wherein the steps of applying the plastic film, hardening the plastic film, and applying the back-foamed layer are conducted in the open foam die.

9. The method as recited in Claim 8, further comprising placing at least one insert into the open foam die before the step of applying the back-foamed layer, wherein said at least one insert is embedded into the back-foamed layer after the step of applying the back-foamed layer.

10. The method as recited in Claim 8, wherein the open foam die comprises an upper mold half and a lower mold half, and wherein the step of applying the back-foamed layer comprises molding the back-foamed layer against the upper mold half to form varying thicknesses in the back-foamed layer.

11. A vehicle body panel, comprising:
a film-like exterior covering;
a rigid film disposed on a reverse side of the exterior covering; and
a back-foamed layer on top of the rigid film.
12. The vehicle body panel as recited in Claim 11, wherein the back-foamed layer is a hardened back-foamed layer, and wherein the hardness of the hardened plastic film is greater than that of the hardened back-foamed layer.
13. The vehicle body panel as recited in Claim 11, further comprising fibers disposed in the back-foamed layer.
14. The vehicle body panel as recited in Claim 13, wherein the fibers are formed in a fiber mat.
15. The vehicle body panel as recited in Claim 13, wherein the fibers are dispersed throughout the back-foamed layer.
16. The vehicle body panel as recited in Claim 11, further comprising at least one insert embedded into the back-foamed layer.
17. The vehicle body panel as recited in Claim 11, wherein the foamed layer is a single back-foamed layer having varying thicknesses.
18. The vehicle body panel as recited in Claim 17, wherein the varying thicknesses in the back-foamed layer differ by at least a factor of two.
19. The vehicle body panel as recited in Claim 11, wherein the exterior covering is a sheet made of material selected from the group consisting of aluminum and plastic.

20. The vehicle body panel as recited in Claim 11, wherein the rigid film is made of a thermosetting material.

21. The vehicle body panel as recited in claim 20, wherein the thermosetting material is one selected from the group consisting of polyester resin and polyurethane.